

REMARKS

Claims 1-16 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claims 1 and 12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Pan (U.S. Pat. No. 6,501,663). This rejection is respectfully traversed.

Claims 1 and 12 are amended and rewritten. Claim 1 now recites:

1. A pattern forming method of forming linear film patterns by arranging droplets of a liquid material discharged from a plurality of discharge portions on a substrate, comprising:
defining a plurality of pattern forming areas arranged with a pitch which is larger than that of the discharge portions, in which the film patterns are to be formed, on the substrate, the areas including:
a first pattern forming area in which a film pattern is to be formed from a side thereof; and
a second pattern forming area in which a film pattern is to be formed from the center thereof; and
arranging the droplets whose width is smaller than that of the film pattern in the side of the first pattern forming area and the center of the second pattern forming area to form the film patterns; and
wherein the discharge portions are provided corresponding to the first and second pattern forming areas, and the droplets are arranged while moving the discharge portions in the direction in which the pattern forming area are arranged.

With respect to claim 12, this claim now recites:

12. A method of manufacturing a device having linear wiring patterns, the method comprising:
a material arranging step of forming the wiring patterns by arranging droplets of a liquid material discharged from a plurality of discharge portions in a plurality of pattern forming areas arranged with a pitch which is larger than that of the discharge portions on the substrate, in which the wiring patterns are to be formed,

wherein in the material arranging step, a first pattern forming area in which a wiring pattern is to be formed from one side thereof and a second pattern forming area in which a wiring pattern is to be formed from the center thereof are defined in the plurality of pattern forming areas, and the droplets whose width is smaller than that of the wiring pattern are arranged in the side of the first pattern forming area and the center of the second pattern forming area to form the wiring patterns; and

wherein the discharge portions are provided corresponding to the first and second pattern forming areas, and the droplets are arranged while moving the discharge portions in the direction.

Support for the amendments to claims 1 and 12 may be found in paragraphs [0009]-[0030]. No new matter is added.

Claims 1 and 12 are directed to methods including features that the arrangement order (i.e., an order of positions in which the portions of the film patterns are formed) of the droplets on the substrate is set to be different in each pattern forming area. For example, referring to Figures 2A-2D, there can be seen a first pattern forming area (R1) in which a film pattern is to be formed from a side thereof; and a second pattern forming area (R2) in which a film pattern is to be formed from the center thereof. The droplets (Wa, Wb, and Wc) are arranged in each of the first and second pattern forming areas (R1 and R2) to form the film patterns.

Moreover, claims 1 and 12 are directed to a method where the number of discharge nozzles under a discharge idle condition may be decreased – even if the nozzle pitch and the pattern pitch are different from each other. In this manner, a high throughput is achieved. Accordingly, claims 1 and 12 each recite that “a plurality of pattern forming areas [are] arranged with a pitch which is larger than that of the discharge portions.”

Pan does not disclose the above features of claims 1 and 12. Because Pan is silent with respect to these features, Pan does not anticipate claims 1 and 12.

Claim 7 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Akahira, et al. (U.S. Pat. No. 6,145,981). This rejection is respectfully traversed.

Claim 7 is amended to recite:

7. A pattern forming method of forming linear film patterns by arranging droplets of a liquid material discharged from a plurality of discharge portions on a substrate, the method comprising, when a plurality of the film patterns are arranged with a pitch which is larger than that of the discharge portions and formed on the substrate:

a first step of arranging the droplets whose width is smaller than that of the film pattern and forming a first area of a first film pattern of the plurality of film patterns;

a second step of arranging the droplets whose width is smaller than that of the film pattern and forming a first area of a second film pattern at the same time as forming a second area of the first film pattern; and

a third step of arranging the droplets whose width is smaller than that of the film pattern and forming a second area of the second film pattern at the same time as forming a third area of the first film pattern; and

wherein the discharge portions are provided corresponding to the first and second film patterns, and the droplets are arranged while moving the discharge portions in the direction in which the film patterns are arranged.

Support for the amendments to claim 7 may be found in paragraphs [0009]-[0030]. No new matter is added.

Similar to claims 1 and 12, claim 7 is also directed to a method including features that the arrangement order (i.e., an order of positions in which the portions of the film patterns are formed) of the droplets on the substrate is set to be different in each pattern forming area. Moreover, claim 7 is also directed to a method where the number of discharge nozzles under a discharge idle condition may be decreased – even if the

nozzle pitch and the pattern pitch are different from each other. In this manner, a high throughput is achieved. In this regard, claim 7 recites that “a plurality of the film patterns are arranged with a pitch which is larger than that of the discharge portions and formed on the substrate.”

Akahira does not disclose the above features of claim 7. Because Akahira does not disclose the above features, claim 7 is not anticipated.

Claims 1-2 and 4-5 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Nakamura, et al. (U.S. Pub. No. 2003/0184613). This rejection is respectfully traversed.

As stated above, claim 1 is amended and rewritten. Nakamura does not disclose the above features of claim 1. Because Nakamura is silent with respect to these features, Nakamura does not anticipate claim 1-2 and 4-5.

Reconsideration and withdrawal of the rejections under 35 USC §102, therefore, is respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura et al. (U.S. Pub. No. 2003/0184613). This rejection is respectfully traversed.

Claim 3 depends from claim 1, addressed above. Claim 3 is neither anticipated nor obvious for at least the same reasons.

Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Akahira, et al. (U.S. Pat. No. 6,145,981). This rejection is respectfully traversed.

Claim 8 depends from claim 7, addressed above. Claim 8 is neither anticipated nor obvious for at least the same reasons.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura, et al. (U.S. Pat. No. 2003/0184613), and further in view of Akahira, et al. (U.S. Pat. No. 6,145,981). This rejection is respectfully traversed.

Claim 6 depends from claim 1, addressed above. Claim 6 is neither anticipated nor obvious for at least the same reasons.

Claims 7, 9, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pan (U.S. Pat. No. 6,50,663) in view of Nakamura, et al. (U.S. Pub. No. 2003/0184613). This rejection is respectfully traversed.

As stated above, claim 7 is amended and rewritten. Claim 13 is also amended. Claim 13 now recites:

13. A method of manufacturing a device having linear wiring patterns, the method comprising:

a material arranging step of forming the wiring patterns by arranging droplets of a liquid material discharged from a plurality of discharge portions in a plurality of pattern forming areas arranged with a pitch which is larger than that of the discharge portions on the substrate, in which the wiring patterns are to be formed,

wherein the material arranging step comprises:

a first step of arranging the droplets whose width is smaller than that of the wiring pattern and forming a first area of a first wiring pattern of the plurality of wiring patterns;

a second step of arranging the droplets whose width is smaller than that of the wiring pattern and forming a first area of a second

wiring pattern at the same time as forming a second area of the first wiring pattern; and

a third step of arranging the droplets whose width is smaller than that of the wiring pattern and forming a second area of the second wiring pattern at the same time as forming a third area of the first wiring pattern; and

wherein the discharge portions are provided corresponding to the first and second pattern forming areas, and the droplets are arranged while moving the discharge portions in the direction in which the pattern forming areas are arranged.

Support for the amendments to claim 13 may also be found in paragraphs [0009]-[0030]. No new matter is added.

Similar to claims 1, 12, and 7, claim 13 is also directed to a method including features that the arrangement order (i.e., an order of positions in which the portions of the film patterns are formed) of the droplets on the substrate is set to be different in each pattern forming area. Moreover, claim 13 is also directed to a method where the number of discharge nozzles under a discharge idle condition may be decreased – even if the nozzle pitch and the pattern pitch are different from each other. In this manner, a high throughput is achieved. In this regard, claim 13 recites that “a material arranging step of forming the wiring patterns by arranging droplets of a liquid material discharged from a plurality of discharge portions in a plurality of pattern forming areas arranged with a pitch which is larger than that of the discharge portions on the substrate, in which the wiring patterns are to be formed.”

As stated above, neither Pan nor Nakamura teach the above features. Because neither Pan nor Nakamura teach the above features, claims 7, 9, and 13 would not have been obvious.

Reconsideration and withdrawal of this rejection, therefore, is respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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